Listening effort in normal-hearing young adults with chronic tinnitus

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Abstract

Aim. It has been hypothesized that tinnitus may impair cognitive processing, as tinnitus patients among others indicate concentration difficulties related to speech understanding. Research stated that non-auditory central aspects, such as working memory and selective attention, may influence hearing and speech understanding in various listening situations. Therefore, speech intelligibility may become more effortful for persons with tinnitus because their cognitive reserve is reduced by the presence of tinnitus. This study aimed to investigate the effect of chronic tinnitus on listening effort.

Material and Method. Thirteen normal-hearing young adults with chronic tinnitus were matched with a control group for age, gender, hearing thresholds and educational level. A dual-task paradigm was used to evaluate listening effort in different listening conditions. A primary speech-recognition task and a secondary memory task were performed both separately and simultaneously. Furthermore, subjective listening effort was questioned for various listening situations. The Tinnitus Handicap Inventory was used to evaluate the influence tinnitus handicap on the amount of listening effort.

Results. Listening effort was significantly higher in the tinnitus group across listening conditions. There was no significant difference in listening effort between listening conditions, nor was there an interaction between groups and listening conditions. Subjective listening effort did not significantly differ between both groups.

Discussion. This study is a first exploration of listening effort in normal-hearing subjects with chronic tinnitus showing that listening effort is increased as compared to a control group. There is a need to further investigate the cognitive functions important for speech understanding and their possible relation with the presence of tinnitus and listening effort.

Conclusion. Listening effort appears to be increased in normal-hearing subjects with chronic tinnitus. Including a test for listening effort in clinical practice may therefore be useful to better understand the complaints about concentration related to speech recognition indicated by tinnitus patients.